

REMARKS

Claims 1, 2, 4-16 and 18-27 are pending in the application. Claims 6-12 and 20-27 are withdrawn from consideration as being directed to a non-elected invention. In the Office Action of March 31, 2004, the Examiner made the following disposition:

- A.) Reopened prosecution.
- B.) Rejected claims 1, 2, 4, 5, 13-16 and 18-19 under 35 U.S.C. §103(a) as being unpatentable over *Maruska* in view of *Goetz*.

Applicants respectfully traverse the rejection and address the Examiner's disposition as follows:

A.) Reopening of prosecution:

Applicants respectfully acknowledge that the Examiner has reopened prosecution in view of Applicants' appeal brief filed on February 25, 2004.

Applicants file this reply under 37 C.F.R. 1.111 in response to the Office Action of March 31, 2004.

B.) Rejection of claims 1, 2, 4, 5, 13-16 and 18-19 under 35 U.S.C. §103(a) as being unpatentable over *Maruska* in view of *Goetz*:

Applicants respectfully disagree with the rejection.

Applicants' independent claims 1 and 13 each claim an insulating nitride layer formed as a buffer layer from a group III-V nitride compound semiconductor heavily doped mostly with cadmium.

This is clearly unlike *Maruska* in view of *Goetz*, which fails to disclose or even suggest an insulating nitride layer formed as a buffer layer that is heavily doped mostly with cadmium. *Maruska* discloses a GaN or AlN buffer layer that is doped with beryllium, magnesium, calcium, carbon or zinc. Thus, unlike Applicants' claims 1 and 13, *Maruska* fails to teach doping a buffer layer with cadmium.

The Examiner combines *Maruska* with *Goetz* in an attempt disclose or suggest a buffer layer heavily doped mostly with cadmium, however, Applicants respectfully submit that the combination of references still fails to disclose or suggest Applicants' claimed buffer layer heavily doped mostly with cadmium. *Goetz* teaches a GaN layer that is doped with cadmium, however, *Goetz's* GaN layer is not a buffer layer.

As is known in the art, the various layers of semiconductor devices have specific characteristics and serve different purposes and accordingly comprise specific materials to effect

those characteristics and purposes. The Examiner argues that it is well known to dope GaN layers with cadmium, based on *Goetz*, however *Goetz* fails to disclose a buffer layer that is doped with cadmium. Although it may be well known to dope a GaN layer, Applicants respectfully submit that at the time of Applicants' invention, it was not known to dope a buffer layer with cadmium. Applicants respectfully submit the Examiner has used impermissible hindsight after reading Applicants' disclosure to argue that it would have been obvious to dope a buffer layer with cadmium in view of *Goetz*. *Goetz* does not dope a buffer layer with cadmium.

The Examiner asserts that *Sinclair* teaches that "[t]he selection of a known material based on its suitability for its intended use supported a prime facie obviousness determination in that case. However, that works against the Examiner's argument, as *Goetz* does not teach selecting cadmium as suitable for an intended use in a buffer layer. Instead, *Goetz* teaches selecting cadmium as suitable for an intended use in a different type.

Therefore, Applicants respectfully submit that it would not have been obvious to combine *Maruska* (which fails to disclose doping a buffer layer with cadmium) and *Goetz* (which fails to disclose doping a buffer layer) to arrive at Applicants' claimed buffer layer that is doped with cadmium. Thus, *Maruska* in view of *Goetz* fails to disclose or suggest claims 1 and 13.

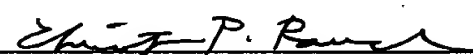
Claims 2, 4, 5, 14-16, 18, and 19 depend directly or indirectly from claims 1 or 13 and are therefore allowable for at least the same reasons that claims 1 and 13 are allowable.

Applicants respectfully submit that the rejection has been overcome and request that it be withdrawn.

CONCLUSION

In view of the foregoing, it is submitted that claims 1, 2, 4, 5, 13-16, 18 and 19 are patentable. It is therefore submitted that the application is in condition for allowance. Notice to that effect is respectfully requested.

Respectfully submitted,

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